US Department of the Interior
Bureau of Land Management

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AN INVENTORY OF BIRD SPECIES OBSERVED IN THE ROCK CREEK-ESCURE MANAGEMENT AREA WHITMAN & ADAMS COUNTY, WASHINGTON 2000 - 20001

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Maurice Vial
Field Team Coordinator and Compiler
(509) 327-6270

Bureau of Land Management
Spokane Resource District
Joyce Whitney, Wildlife Biologist
Project Contact
1103 N. Fancher Rd.
Spokane, Washington 99212-1275

SUMMARY

1. **INTRODUCTION/MISSION**

In June of 1999, shortly after its acquisition by the Bureau of Land Management (B.L.M.), a group of Spokane birders offered to conduct a bird census on the 13,000 plus acres Escure Ranch. The vastness of this hitherto private land, and its quintessential channeled scabland features, were of great interest to the Eastern Washington birding community. Heavy grazing by ovines and bovines were well known, but due to its restricted access very little was known about the avian populations, how they adapted and how they related to the surrounding areas. This knowledge was particularly desirable in view of several nearby sections of state owned public lands managed by the Washington State Department of Fish and Wildlife.

The B.L.M. accepted this proposal, and a few months later decided to officialize the process, with some reimbursements, and a request for a formal report by the team coordinator.

The mission was to compile all identified species, where, when, and how, during the survey period ending on September 31, 2001. It was not part of the mission to draw conclusions, speculate on causes, or to recommend actions, and none of these were intentionally made. Some neutral assumptions about bird presence or absence, habitat and numbers have been occasionally included.

2. **SITE DESCRIPTION**

For more detailed information on the following, refer to B.L.M. document: Environmental Assessment for the Proposed Acquisition of the Escure Ranch, Adams and Whitman Counties, Washington (WAOR 50525 EA OR 130-09-07 May 1999). This is listed at the B.L.M. Spokane Branch web site; www.or.blm.gov/spokane and select Planning Documents/ Border Resource Area/ Previous Years Projects.

A. GEOGRAPHY

The Escure Ranch parcel consists of about 13,000 plus acres, astride the Adams (west) - Whitman (east) County lines, State of Washington. The city of Sprague is 16 miles to the north and the city of St. John 12 miles to the south. The center of the Escure parcel is near the intersection of 47 degrees, 0 minute N. latitude and 118 degrees, 0 minute W longitude. See map at Paragraph 6, Sector Maps / Photos.

It is bordered to the north by the semi-private Breeden Rd. - its eastern boundary is the east limit of sections 18-19-30-31, Range 39E, Township 18N, and the east limit of Sections 5 & 8, Range 39E, Township 17N - its southern boundary by the south limit of these 2 sections, on westward to the alignment of Zornes Road, then Calloway Road, to the west by the vacated Burlington-Northern Railroad bed, back north to Breeden Road.

A second site (Bailey Ranch) part of the same administrative unit is located 5 plus miles to the northwest, south of Wagner Rd. and Highway 23. It is made of Section 29, 31, and 32, Range 40E, T19N - and that part of Section 5, Range 40E, Township 18N, north of the Chicago-Milwaukee railroad bed.

B. HISTORY

The site was within the use range of several Native American nomadic bands belonging to the Columbia Plateau group. It was visited by the early explorer David Thompson (1805) and Lewis and Clark (1811) expeditions. Gustavus Sohan and Captain John Mullan described the region as suitable for settlement with water, timber and grasses for grazing. The Mullan Military Road that linked Fort Benton in Montana Territory to Walla Walla was extended in 1870 to link Walla Walla to Fort Spokane. It is located on the western edge of the Escure parcel. Following the establishment of more trails, traders, trappers, prospectors, and ultimately settlers roamed the site. The Texas trail from Walla Walla to Spokane, across the Palouse Hills, is located a few miles east of Rock Creek. A circular stone corral, integrating dry stone masonry with a natural low basalt cirque, to create a visually attractive texture, is rumored to have been erected by cattle rustlers. It is located near the western boundary of the State owned section.

Later, consolidation of ownership, cattle ranching and sheep herding came to the site. The Escure Sheep Company was founded in the 1930's by two enterprising and skillful Spanish Basque brothers, John and Marcos Escure. They ran an amazing system of land use and orientation markers. Many stone cairns, and other monuments, some of intriguing function, dot the landscape. Located often on high ground, they now provide perches for raptors. Stretches of original fencing divide the site, and are still difficult to cross today.

C. CLIMATE

Climatic conditions on the site are not very distinct from the Columbia Basin of which it is a part. It is hot and dry in summer. In winter it is frequently snow free while areas to the north are snow bound, although snow accumulations do occur. Annual precipitation does not generally exceed 14 inches. Spring arrives two or three weeks ahead of Spokane. Buttercups were noted on a February 28 visit. Steady rain occurred on only one of the 30 surveys conducted. The highest temperature was 100 degrees F. on July 13, 2001. The low temperature was 30 degrees F. on November 12, 2000. It is a matter of record that the snow pack was much below normal in the winter of 2000/2001. Rainfall as noted above was only modest in the spring of 2001; therefore, most bodies of water were at low levels or dry early in the year. A dry summer followed with little precipitation but surprisingly, several low lying sloughs retained some water almost throughout the year (see Paragraph 3.D. - Sector Description).

D. CURRENT CONDITIONS

The Escure Ranch consists of exposed bedrock of basalt lava flows cut by the Rock Creek drainage, numerous dry coulees oriented north to south and tall hills of Palouse loess soil; all of which characterize the Eastern Washington Channeled Scablands. Rock Creek divides the unit longitudinally into unequal parts. Heavy grazing throughout the 20th century has left the land infested with exotic plants, although signs of recovery were apparent in many places. The common denominator is that of a barren rugged landscape with short vegetation. The main site can be divided into several sub-habitat types, within that denominator.

Cliffs and coulees are replaced to the south and southwest by gently sloping basalt plain, dominated by cheat grass and other invasive species. Bottomlands in most shaded areas show some survival of native bunchgrass and provide association with northerly exposed talus slope vegetation. Less protected bottomlands are harsher with species such as common teasel and grease wood types. Two land shelves separated by exposed basalt and broken channels occur on the north east. The first is at the base and west of the series of north/south, 80 meters tall Palouse loess hills paralleling the east side access road. It has been the object of weed control and planting by the B.L.M. The lower shelf is the coulee bed/flood plain of Rock Creek. Vetch species covered most of it in the early summer of 2001. This flood plain narrows as it extends south and becomes the Rock Creek canyon/channel where canary grass, common teasel, nettles and several stands of almost impenetrable water hemlock are the dominant species. The creek banks themselves are a mix of desirable and undesirable habitats of water hemlocks, willows, water birches, red osier, wild roses and even a few poplars.

Wall Lake, Perch Lake, Turtle Lake and 4 or 5 other unnamed smaller lakes are located in the northwest area. Wall Lake is the largest and probably deepest. The site also has several intermittent sloughs. They are distributed randomly and are of variable quality, but the potential is there for the right time and right conditions.

The separate part of the unit to the northeast along Highway 23 has many of the same vegetation and geological features. It is mitigated by a mile long, shallow marsh with cattails, reed and other vegetation. The marsh is the depression in which Packer Creek flows, but is independent of it. The south east of the site along the Chicago-Milwaukee track has a substantial intermittent pond and well vegetated canyons. The area between Packer Creek and Wagner Road is mostly cheat grass and noxious weeds, with a few hawthorns (see paragraph 3.D - Sector Description).

For more detailed information on current vegetation and the restoration project see B.L.M. document: Spokane District Escure Vegetation Restoration Project, # OR-135-00-01, at the Spokane B.L.M. web site.

3. **SURVEY METHODOLOGY**

A. OVERVIEW

Seventeen volunteers took part in the survey, some only once but others as many as four times. The level of skill and knowledge varied from basic to expert, but all were familiar with common Eastern Washington birds. Unless reported by top team members, all unusual or surprising sightings were thoroughly questioned and accepted by the team coordinator only if the answers provided removed all doubts about the species identity.

To ensure consistency in the reporting, a field form was devised to be used by all surveyors. These forms were approved by the B.L.M. District and were submitted jointly with this report.

A schedule of visits was established to ensure that they would be distributed evenly and seasonally over the survey area and survey period.

In order to also ensure a wider coverage and avoid concentration in the more productive areas, the parcel was divided into five survey sectors, rotated among teams, and described in more detail at Paragraph 3.D -Sector Description.

Much thought was given on how to present the survey results. A purely numerical inventory could not be complete and would be unsatisfactory, since a large over count would inevitably occur, particularly in the case of low numbers, fixed individuals. The decision was made to report our observations in a representative manner incorporating all information pertinent to the species. As a plus, the method can readily accept additional surveys and the modified sharing of habitats between different sectors in the future.

B. COVERAGE DESCRIPTION

Thirty (30) survey visits took place during the survey period. Teams numbered from one up to five individuals. The team coordinator frequently joined other teams. Not all surveyors visited all sectors and some surveyors visited all sectors more than once, depending on their availability. In the process of recording all birds encountered, more than one sector was at least partially surveyed on each visit. In order to avoid the heat of summer days surveyors were authorized and encouraged to arrive in the evening and stay overnight. Emphasis was placed on no impact and early start. The field work was professionally executed with no problems (see paragraph 4 - Survey Assessment).

Table 1 of Paragraph 5. - Tables describe survey visits by date and sector.

C. PROTOCOL

The mission being to provide a baseline inventory for the unit, the imposition of localized transects and a rigid protocol would have been premature, and would have left most of the area in its unknown state. That possibility was nonetheless initially considered along with other more rigorous procedures. It was determined that the entire unit should be covered and the maximum numbers of species should be contacted, before selecting where more site specific investigations should take place. Surveyors were instructed to:

1) Record all species observed, even when in transit across non-assigned sectors.
2) To justify reimbursements, they were requested to spend at least 6 hours in the field in summer, excluding driving to the site, and at least 8 hours in winter but including driving to the site.
3) To submit observations even if their visits were unofficial and no reimbursement were sought (a few of those were turned in).

Private inholdings were not entered, but birds that flew over or were observed from the outside were counted. Also counted were birds observed outside of, but close to the boundary of the public land, whenever good judgment indicated that they were using it for feeding and possibly nesting.

The majority of surveys exceeded minimum duration requirements.

D. SURVEY SECTORS DESCRIPTION

The main parcel (Escure) and the smaller parcel (Bailey) of the Rock Creek Management Area have been divided for the purpose of the survey in six survey sectors numbered 1A, 1B; and 2 thru 5 (see Paragraph 6. - Sector Maps / Photos). These survey sectors were established to diversify the habitat types as much as practical and facilitate access (see access comments in Paragraph 4. - Survey Assessment). A private inholding consisting of Section 2, T18N, R38 E, is located within the main parcel.

Another private inholding is located in the smaller parcel (Bailey). It consists of about 120 acres with its own driveway. It is an active farm residence and was neither entered nor directly observed. Due to its limited area, no birds stayed within it for very long, and flew out where they usually could be identified.

The State of Washington has an inholding in the main parcel consisting of Section 36, T18N, and R38E. It could not logistically be excluded, it was thus treated as an integral part of the survey area and added to survey sector 3; however, the frequent presence of cattle sometimes of ambiguous disposition, discouraged visitations.

The riparian channel of Rock Creek being a distinctive feature was shared by three survey sectors.

1. SURVEY SECTOR 1A

Sector 1A is the detached parcel along Highway 23 (Bailey) as previously described. It is located 5 plus miles to the Northwest, south of Wagner Rd, and Highway 23.

2. SURVEY SECTOR 1B

Sector 1B is the north east corner of the Escure parcel and is made of 4 sections (13, 24, 18, 19) south of Breeden road and west of the access road. It includes both sides of Rock Creek south of the Breeden Rd Bridge. It has a varied habitat of flood plains, scrubland, and the three North/South steep hills, flood islands, of Palouse loess soil. These are the highest elevations in the unit. It also includes the large area of mustard eradication and native plant reseeding, some intermittent ponds, and the east shore of Perch Lake.

3. SURVEY SECTOR 2

The north west corner of the main parcel (Escure), it includes the 3 sections (27, 26, 25) between the Burlington Northern vacated railway bed and the Adams-Whitman County line, section 23, parts of section 15 and 14 south of Breeden Rd. and part of section 22 east of the Burlington Northern railway bed.

It consists almost exclusively of channeled scabland with abundant cheat grass and noxious weeds. Some bunch grass lowland meadows exist, vegetation is sparse. There are several man made water holes in the sector. The major permanent lakes, Wall, Turtle, and Perch are there along with 3 or 4 seasonal intermittent sloughs or ponds. These are usually ringed with shrubs and grasses. The south west of the sector (section 27) is particularly rugged but has some willows and wild roses in sheltered humid canyon bottoms.

4. SURVEY SECTOR 3

The south west corner of the main parcel (Escure), it includes the state owned inholding, then the 3 sections plus (35, 34, 3) west of the private inholding, north of Calloway road and east of the Burlington Northern vacated railway bed.

Section 35, adjacent to the state land, is typical scabland channels, the rest is a rolling featureless landscape, with low vegetation and sandy soils, with the exception of the northern extension of privately owned Twelve Mile Lake which becomes a narrow shallow wetland in the site (Twelve Mile Spring). Another notable feature is 2 ponds in section 34 near the south limit of sector 2. Section 11 immediately south of the private inholding has been also assigned to sector 3.

5. SURVEY SECTOR 4

This sector is the most varied of the Escure parcel. It is essentially the 4 sections (30, 36, 5, and 8) in which Rock Creek flows from Sector 1B to the public land south boundary.

It has all the habitats found on the parcel with the notable exception of the lakes. The best habitat along Rock Creek with the heaviest vegetation is in this survey sector. It is also the location of the Ranch House and adjacent out-buildings and of some of the largest trees on the ranch. The bottomland between Towell Falls and then south boundary is densely wooded with water hawthorns. This entrance of the canyon has canary grass, common teasel, nettles, and other associates.

6. SURVEY SECTOR 5

This is the area west of Rock Creek, south of the state owned inholding, east of the private inholding and sector 3 (section 11) and bordered to the south by the public land south boundary.

The western half is the same gentle slope as the south west of Section 3, and has the same aspect, short vegetation, cheat grass, bunch grass, noxious weeds. It has three intermittent sloughs that became playas in early summer. Two sheltered bottomlands are found in the north east corner of the survey sector, among high cliffs. Bunch grass and reed surround ponds that retained water well into summer, then remained green meadows. The canyons are deep and cliff faces are high. The rim ascends and descends as it follows Rock Creek southwards. A promontory juts below creating the last river bend before it leaves the site.

4. **SURVEY ASSESSMENT**

At the inception of this project we had high hope to locate 2 species, which are rare and local in Washington. The Ferruginous Hawk and the Ash-throated Flycatcher. Neither was seen during the survey. An immature Ferruginous Hawk was observed on May 13, 2000.near Davis Road between the two parcels. The only recent local record for the Ash-throated Flycatcher was on another B.L.M. parcel south of Mohler in 1994.

This inventory cannot be interpreted as a complete list of the avian birds of the Rock Creek management unit. Many species are notoriously missing from it, and there is little doubt that some occurred, maybe in fair numbers, when no one was looking. We are particularly surprised that the Black Tern didn't yield a single observation. No White-throated Swift or Evening Grosbeak to name two others.

For a land of such uniformity, even when the riparian areas are taken into account, 138 species observed is a significant amount. The survey was carried during a period of low precipitation and mild winter. Summer came early and practically no rain fell until the field work was completed. It is very likely that a cooler weather with higher water levels and longer lasting wetlands would have produced different results by attracting more species to the area.

Two situations also affected the performance of the survey. The condemnation of the bridge crossing Rock Creek at the ranch house in May 2001, and the almost simultaneous road work that turned the western part of Breeden Road into a rough Jeep trail denied direct access to assigned sectors. Sectors 2 and 3 could be reached only from the south access on Zornes Road, resulting in slow progression and loss of survey time. In the northwest, access was also impeded by an adjacent land owner's restrictions.

The overall impression was the irruptive or sporadic character of the observations. An estimated two hundred plus American Goldfinches on November 12, 2000 in a small cluster of red osier and wild rose bush is not a frequent spectacle. Two hundred plus Yellow-headed Blackbirds on June 13, 2001 within less than a mile, on the ground among teasels were definitely a high concentration. Discrepancies in numbers were noted. High numbers of sparrows occurred during migration, chiefly in the early spring, while the species were barely represented in the summer but started building up again in September with immatures.

Two other breeding species produced consistently high numbers. The Western Meadowlark was seen everywhere, observations were usually topped at 50 plus, although some surveyors kept counting beyond that. A visit on August 5, 2000, in sector 1A and 1B produced only one individual. A single Western Meadowlark was seen on Dec 1, 2000 and two were feebly singing on Feb 26, 2001.

The other breeding species that occurred in stunning numbers was the Bullock's Oriole. The high numbers occurred as expected along Rock Creek, usually in the Sector 4 portion. On July 13, 2001 75 individuals were counted, with a small minority of adult males, over longer meandering but only 3 direct miles. It was a festoon of nests and that segment of Rock Creek could be a candidate for the highest concentration of Bullock's Orioles in the nation, and thus possibly the world. Over the same area, July 26, 2001 (13 days later), the number had dropped to 21. It was not visited in August and two visits in September recorded no Bullock's Orioles.

It seems that the unit is widely used by many species possibly as a staging area during migration when numbers are high on one visit and low on the next.

Numerous Double-crested Cormorants were observed on the larger lakes, which might not be viewed as altogether good news.

Raptors were not as commonly encountered as one would have expected. The Golden Eagle was noted only once, an immature over Sector 3. No Bald Eagle. A known Prairie Falcon nest in Sector 4 produced 3 fledglings. Several Red-tailed Hawk nests with juveniles were located. Swainson's Hawks were observed in Sector 1A, 1B, SW of Sector 3 and Sector 1B, and also further west over private land. Nesting was suspected in the private inholding, but no nest could be located.

The Great Horned Owl is well represented with observations on 16 visits, in all sectors. One pair resides in one of the ranch buildings, but no young were noted. The only Barn Owl was observed near Twelve Mile Spring and alarmingly close to a Great Horned Owl nest, on private land 3/4 of a mile to the southwest.

A Chukar, usually a sedentary species, was observed on April 21/01 in a less that perfect habitat. The observation was made by one of the premier birders in the State, it was therefore accepted. The only sizable flock of California Quails was in the extreme southeast of Sector 1A. Small flocks of Gray Partridges were regularly seen.

It was interesting to note that so many of Washington duck species were recorded in such limited acreage of water, even the less than common Eurasian Wigeon and Greater Scaup. Tundra Swans were noted in March.

Passerines followed the same erratic pattern. Early, by several weeks, American Pipits showed up with Horned Larks in a mixed flock on July 27/2001 in Sector 1B. Several pairs of Bewick's Wren nested near Rock Creek. They are uncommon in the region. House Wren and Marsh Wren were scarce but Rock Wren and Canyon Wren were common.

There is no significant sage brush in the unit, therefore the report of a Sage Sparrow too late on May 18 to be a migrant, was highly suspect. The observer; however, described it with such accuracy, (even when "tricked") that it was accepted. Possibly a mate seeking errant. The Brewer's Sparrow being less exclusive, its 5 observations by different surveyors and from different sectors was not questioned. The visit maximum of 4 individuals in Sector 1A was on the last survey September 27/2001 during migrations.

Much other non-breeding, out of habitat, passerines species were observed in small numbers during migrations. A flock of 21 Yellow-rumped warblers, in one single willow, was noted Sep 27/2001.

It is important to note that "season" in table 2 refers only to when individuals of a species were observed on this survey. It is not to be taken as a seasonal rating for that species in the region.

Surveyors were asked to also record other interesting wildlife. The mule deer herd is presumably well monitored. A few occasional white-tailed deer were encountered. Coyotes were present but not in excessive numbers. Their evening and morning concerts were often distant. A den was located in Sector 1B. On April 21/01 a coyote was observed in the company of a larger, darker canine, most likely a dog, about 1/4 miles northwest of the ranch house on a rocky slope. The association appeared neither intimate nor hostile. Three different species of snakes were counted in addition to the many western rattlesnakes that often were too close for comfort. Small mammals were seldom encountered. That could be a factor in the under populations of raptors. No Columbia Ground Squirrels were seen, and Yellowbelly Marmots were infrequent. The most remarkable mammal was a River Otter in Rock Creek, 200 meters south of the intersection of Sector 1B, 2 and 4. Crawfish shell filled scats were previously noticed on the bank. Non-avian wildlife is listed at the end of the completed daily form.

Prepared by Maurice Vial.

Table 1

NUMBER OF COUNTS PER SECTOR						
DATE	1A	1B	2	3	4	5
MAY 26/00					●	●
JUNE 26			●			
JULY 16		●			●	
AUG 5	●	●			●	
AUG 31		●				
NOV 12/01		●			●	
DEC 1					●	●
FEB 26				●		●
MAR 14					●	
MAR 27		●	●			
APR 5			●			
APR 6	●	●				
APR 16						●
APR 18					●	
APR 21				●		
MAY 18			●			
MAY 22				●		
MAY 23	●					●
JUNE 13					●	
JUNE 14				●		
JUNE 29	●	●				
JULY 13					●	
JULY 24			●			
JULY 26		●			●	
JULY 27			●	●		
AUG 9			●			
AUG 25			●			●
SEP 2			●	●	●	
SEP 14						●
SEP 27	●	●				

Table 2

LIST OF OBSERVED SPECIES

(1) HIGHEST NUMBER PER VISIT IS HIGHEST NUMBER COUNTED - ONE VISIT MAY BE EVENING AND FOLLOWING MORNING. SECTOR IS THE SECTOR IN WHICH THE HIGHEST NUMBER WAS COUNTED

(2) BREEDING

CON:	CONFIRMED - WHEN NEST WAS LOCATED OR JUVENILES WERE PRESENT
PRE:	PRESUMED- WHEN THE SPECIES WAS IN ITS BREEDING RANGE, SEASON, AND HABITAT
UNK:	UNKNOWN - WHEN THE BREEDING OF THE SPECIES OBSERVED CANNOT BE PRESUMED WITHOUT CONFIRMATION, MAINLY DUE TO LIMITED SUITABLE HABITAT.
NON BRD:	NON BREEDER - WHEN THE SPECIES IS OUTSIDE OF ITS BREEDING RANGE OR HABITAT, SUCH AS LONG RANGE MIGRANTS

(3) HABITAT:

RIP:	RIPARIAN VEGETATION AND WATER SURFACE
SCL:	SCABLAND, FAVORS CLIFFS AND CANYONS OVER OPEN GROUND
OPG:	OPEN GROUND, FAVORS OPEN GROUND OVER CLIFFS AND CANYONS
AHB:	ALL HABITATS, OBSERVED ANYWHERE
SKY:	FLYING HIGH WITH NO APPARENT GROUND DESTINATION

(4) OBSERVATION RATIO: THE NUMBER OF VISITS WHEN THE SPECIES WAS OBSERVED OVER THE TOTAL NUMBER OF VISITS AND THE SEASON, W, M, SP, S

SPECIES	SECTORS WHERE OBSERVED						HIGHEST NUMBER PER VISIT and SECTOR (1)	BREEDING 2)				HABITAT (3)					OBSERVATION RATIO (4)
	1A	1B	2	3	4	5		CON	PRE	UNK	NON BRD	RIP	SCL	OPN	SKY	AHB	
PIED-BILLED GREBE			●	●			3/3			●		●					3/30 SP S
HORNED GREBE		●					2/1B				●	●					1/30 S
DOUBLE-CRESTED CORMORANT			●	●			11/2			●		●					3/30 S
GREAT BLUE HERON		●	●	●	●	●	6/2					●					16/30 SP S
GREAT EGRET		●					1/1B			●		●					1/30 S
TUNDRA SWAN		●					3/1B				●	●					10/30 M
CANADA GOOSE	●	●	●	●	●	●	33/4	●				●					10/30 SP
MALLARD		●	●	●	●	●	31/2	●				●					27/30 S W
WOOD DUCK			●				2/2			●		●					1/30 SP
GADWALL			●	●	●		4/3&4			●		●					3/30 S
EURASIAN WIGEON			●				1/2	●			●	●					1/30 SP
AMERICAN WIGEON		●	●	●	●	●	15/2		●			●					6/20 SP W S
BLUE-WINGED TEAL			●	●			12/2		●			●					3/30 SP S

SPECIES	SECTORS WHERE OBSERVED						HIGHEST NUMBER PER VISIT and SECTOR (1)	BREEDING 2)				HABITAT (3)					OBSERVATION RATIO (4)
	1A	1B	2	3	4	5		CON	PRE	UNK	NON BRD	RIP	SCL	OPN	SKY	AHB	
CINNAMON TEAL			●	●			16/2			●		●					3/30 SP
AMERICAN GREEN-WINGED TEAL			●	●			15/3		●			●					4/30 SP
NORTHERN SHOVELER			●	●	●		15/3		●			●					7/30 SP S
NORTHERN PINTAIL		●	●				2/1B			●		●					2/30 SP
REDHEAD			●				8/2		●			●					3/30 SP
RING-NECKED DUCK			●	●			18/2		●			●					4/30 SP S
CANVASBACK			●				3/2			●		●					1/30 SP
RUDDY DUCK			●	●			8/3		●			●					2/30 SP
COMMON GOLDENEYE			●				21/2				●	●					2/30 SP
LESSER SCAUP			●				6/2			●		●					3/30 SP
GREATER SCAUP			●	●			6/2				●	●					1/30 SP
BUFFLEHEAD			●	●			5/2				●	●					3/30 SP
HOODED MERGANSER			●				2/2			●		●					2/30 SP
COMMON MERGANSER		●	●		●		9/1B		●			●					4/30 SP S
TURKEY VULTURE		●			●	●	1/-			●					●		3/30 SP S
OSPREY					●		1/-			●		●					3/30 SP S
NORTHERN HARRIER	●	●	●	●	●	●	7/4		●							●	13/30 W S
SHARP-SHINNED HAWK			●				1/ -				●				●		1/30 SP
COOPER'S HAWK	●						1/-			●					●		1/30 S
SWAINSON'S HAWK	●	●		●		●	4/1A	●						●			7/30 SP S
RED-TAILED HAWK	●	●	●	●	●	●	11/4	●								●	27/30 W S
ROUGH-LEGGED HAWK		●			●		1/-				●			●			2/30 SP
GOLDEN EAGLE				●			1/-				●				●		1/30 SP
AMERICAN KESTREL	●	●	●	●	●	●	9/5		●			●	●				22/30 SP S
PRAIRIE FALCON				●	●	●	5/4	●					●	●			6/30 SP S
GRAY PARTRIDGE	●	●	●	●	●	●	14/3	●								●	14/30 W S
CHUKAR				●			1/-			●			●				1/30 SP
RING-NECKED PHEASANT	●	●	●	●	●	●	30/1B	●								●	17/30 S W
CALIFORNIA QUAIL	●				●		15/1A		●			●	●				4/30 S
AMERICAN COOT	●		●	●			9/2			●		●					5/30 SP
KILLDEER	●	●	●	●	●	●	9/4		●			●		●			17/30 SP S
BLACK - NECKED STILT			●	●			9/2			●		●					2/30 SP
AMERICAN AVOCET			●	●			7/3		●			●					3/30 SP S

SPECIES	SECTORS WHERE OBSERVED						HIGHEST NUMBER PER VISIT and SECTOR (1)	BREEDING 2)				HABITAT (3)					OBSERVATION RATIO (4)
	1A	1B	2	3	4	5		CON	PRE	UNK	NON BRD	RIP	SCL	OPN	SKY	AHB	
LESSER YELLOWLEGS		●	●				3/2				●	●					2/30 M
GREATER YELLOWLEGS			●				1/-				●	●					1/30 M
SPOTTED SANDPIPER		●	●		●		5/4	●				●					5/30 SP S
WESTERN SANDPIPER				●			1/-				●	●					1/30 M
LONG-BILLED DOWITCHER			●				7/2				●	●					1/30 M
COMMON SNIPE	●			●	●		5/1A		●			●					5/30 M S
WILSON'S PHALAROPE				●			11/3			●		●					1/30 SP
RED-NECKED PHALAROPE				●			1/-				●	●					1/30 SP
RING-BILLED GULL		●	●		●	●	3/1B				●	●			●		5/30 SP
CALIFORNIA GULL			●	●	●		4/4				●	●			●		7/30 SP
CASPIAN TERN			●		●	●	4/5			●		●			●		6/30 SP S
FORSTER'S TERN					●		1/-				●	●					1/30 S
MOURNING DOVE		●			●	●	30/4		●			●					14/30 SP S
ROCK DOVE		●			●		31/1B			●			●	●	●		2/30 W S
BARN OWL				●			1/-			●			●				1/30 SP
GREAT-HORNED OWL	●	●	●	●	●	●	5/1A					●	●				16/30 S W
COMMON NIGHTHAWK		●	●	●	●		23/2		●				●	●			8/30 SP S
CALLIOPE HUMMINGBIRD					●		2/4				●		●				1/30 SP
BELTED KINGFISHER		●			●	●	4/1B		●			●					5/30 S W
RED-NAPED SAPSUCKER					●		1/-				●		●				1/30 SP
DOWNY WOODPECKER		●			●	●	1/-		●			●					4/30 SP S
HAIRY WOODPECKER					●		1/-			●		●					1/30 W
NORTHERN FLICKER	●	●	●		●	●	5/1A	●				●	●				8/30 SP S
WESTERN WOOD-PEWEE		●		●	●		18/4	●				●					5/30 S
WILLOW FLYCATCHER		●			●		1/-			●		●					2/30 S
DUSKY FLYCATCHER					●		1/-			●		●	●				1/30 S
PACIFIC-SLOPE FLYCATCHER	●						1/-			●		●	●				1/30 S
SAY'S PHOEBE		●	●	●	●	●	7/3	●								●	13/30 SP S
WESTERN KINGBIRD		●	●	●	●	●	25/4	●				●	●				12/30 SP S
EASTERN KINGBIRD		●	●	●	●	●	76/4	●				●	●				17/30 S
HORNED LARK	●	●	●	●	●	●	79/1B	●					●	●			24/30 S W
TREE SWALLOW		●	●			●	10/2	●				●		●			3/10 S

SPECIES	SECTORS WHERE OBSERVED						HIGHEST NUMBER PER VISIT and SECTOR (1)	BREEDING 2)				HABITAT (3)					OBSERVATION RATIO (4)
	1A	1B	2	3	4	5		CON	PRE	UNK	NON BRD	RIP	SCL	OPN	SKY	AHB	
VIOLET-GREEN SWALLOW	●	●	●	●	●	●	50/2	●								●	12/30 SP S
NORTHERN ROUGH-WINGED SWALLOW		●	●	●	●	●	42/4	●				●					11/30 SP S
BANK SWALLOW	●				●	●	240/4	●					●	●	●		6/30 S
BARN SWALLOW		●	●	●	●	●	20/4	●					●		●		11/30 SP S
CLIFF SWALLOW		●	●	●	●	●	300/4-2	●				●	●		●		17/30 SP S
BLACK-BILLED MAGPIE	●	●	●	●	●	●	19/4	●								●	21/30 S W
AMERICAN CROW				●			2/3			●			●	●	●		2/30 SP S
COMMON RAVEN	●	●	●	●	●	●	16/3		●				●	●	●		19/30 SP W
BLACK-CAPPED CHICKADEE	●						13/1A			●			●				1/30 S
MOUNTAIN CHICKADEE					●		1/-			●							1/30 SP
RED-BREASTED NUTHATCH						●	1/-			●		●					1/30 SP
PYGMY NUTHATCH					●		2/-			●		●					2/30 SP
ROCK WREN		●	●	●	●	●	21/4	●					●				23/30 SP S
CANYON WREN	●	●	●	●	●	●	7/4	●					●				17/30 S SP
BEWICK'S WREN	●	●		●	●	●	6/4	●				●					8/30 SP S
HOUSE WREN		●	●		●	●	10/4	●				●	●				8/30 SP S
MARSH WREN	●		●	●	●	●	4/1A		●			●					7/30 SP S W
GOLDEN-CROWNED KINGLET	●			●	●		15/4				●	●					3/30 M
RUBY-CROWNED KINGLET	●	●		●	●		29/4				●	●					4/30 M
WESTERN BLUEBIRD				●			1/-			●			●	●			1/30 S
MOUNTAIN BLUEBIRD					●		8/-				●		●	●			1/30 S
TOWNSEND'S SOLITAIRE			●				1/2			●		●		●			2/30 SP
AMERICAN ROBIN	●	●	●	●	●	●	34/4	●								●	19/30 SP S
AMERICAN PIPIT		●			●		15/4				●			●			2/30 M
CEDAR WAXWING		●			●		18/4			●							2/30 SP S
NORTHERN SHRIKE					●	●	1/-				●			●			2/30 W
EUROPEAN STARLING	●	●	●	●	●	●	180/4	●								●	17/30 S W
ORANGE-CROWNED WARBLER					●		1/-			●		●					1/30 SP
NASHVILLE WARBLER				●			1/-			●		●					1/30 SP
YELLOW WARBLER		●			●		4/4		●			●					5/30 SP S
YELLOW-RUMPED WARBLER		●			●		21/1B			●		●					2/30 SP S
TOWNSEND'S WARBLER				●	●		2/3			●		●					2/30 SP

SPECIES	SECTORS WHERE OBSERVED						HIGHEST NUMBER PER VISIT and SECTOR (1)	BREEDING 2)				HABITAT (3)					OBSERVATION RATIO (4)
	1A	1B	2	3	4	5		CON	PRE	UNK	NON BRD	RIP	SCL	OPN	SKY	AHB	
MACGILLIVRAY'S WARBLER				●		●	3/5			●		●					2/30 SP S
COMMON YELLOWTHROAT					●		1/-			●		●					1/30 SP
WILSON'S WARBLER				●			1/-				●		●				1/30 S
YELLOW-BREASTED CHAT			●		●		2/4-5		●			●	●				3/30 SP S
WESTERN TANAGER		●					1/				●		●				1/30 S
BLACK-HEADED GROSBEAK					●	●	3/4		●			●					4/30 SP S
LAZULI BUNTING		●		●	●	●	10/4	●				●	●				7/70 SP S
SPOTTED TOWHEE	●				●		1/-		●								3/30 SP S
CHIPPING SPARROW	●						1/-				●		●				1/30 S
BREWER'S SPARROW	●		●	●		●	4/1A			●				●			5/30 S SP
VESPER SPARROW	●	●	●	●	●	●	24/2	●					●	●			22/30 SP S
LARK SPARROW		●	●	●	●		8/4	●					●	●			4/30 S
SAGE SPARROW			●				1/-			●							1/30 SP
SAVANNAH SPARROW	●	●	●	●		●	19/3	●					●	●			15/30 SP S
GRASSHOPPER SPARROW	●	●	●	●	●	●	18/1B	●						●			18/30 SP S
SONG SPARROW	●	●	●	●	●	●	15/4	●				●					26/30 W S
LINCOLN'S SPARROW	●						1/-				●		●				1/30 M
WHITE-CROWNED SPARROW	●	●		●	●	●	23/4				●					●	6/30 M
DARK-EYED JUNCO		●	●		●		71/4			●		●					4/30 SP M
RED-WINGED BLACKBIRD	●	●	●	●	●	●	250/4	●				●					22/30 SP S
YELLOW-HEADED BLACKBIRD	●	●	●	●	●	●	195/4		●			●					10/30 S
BREWER'S BLACKBIRD	●	●	●	●	●	●	30/4	●								●	19/30 SP S
BROWN-HEADED COWBIRD		●	●		●	●	52/4	●								●	6/30 SP S
BULLOCK'S ORIOLE		●	●	●	●	●	74/4	●				●					10/30 S
WESTERN MEADOWLARK	●	●	●	●	●	●	90/4	●								●	27/30 SP S W
RED CROSSBILL						●	8/5				●				●		1/30 W
PINE SISKIN					●		3/4				●						1/30 W
AMERICAN GOLDFINCH		●		●	●	●	210/4	●				●					11/30 S W

SPECIES TOTAL : 138

Table 3

SPECIES DISTRIBUTION

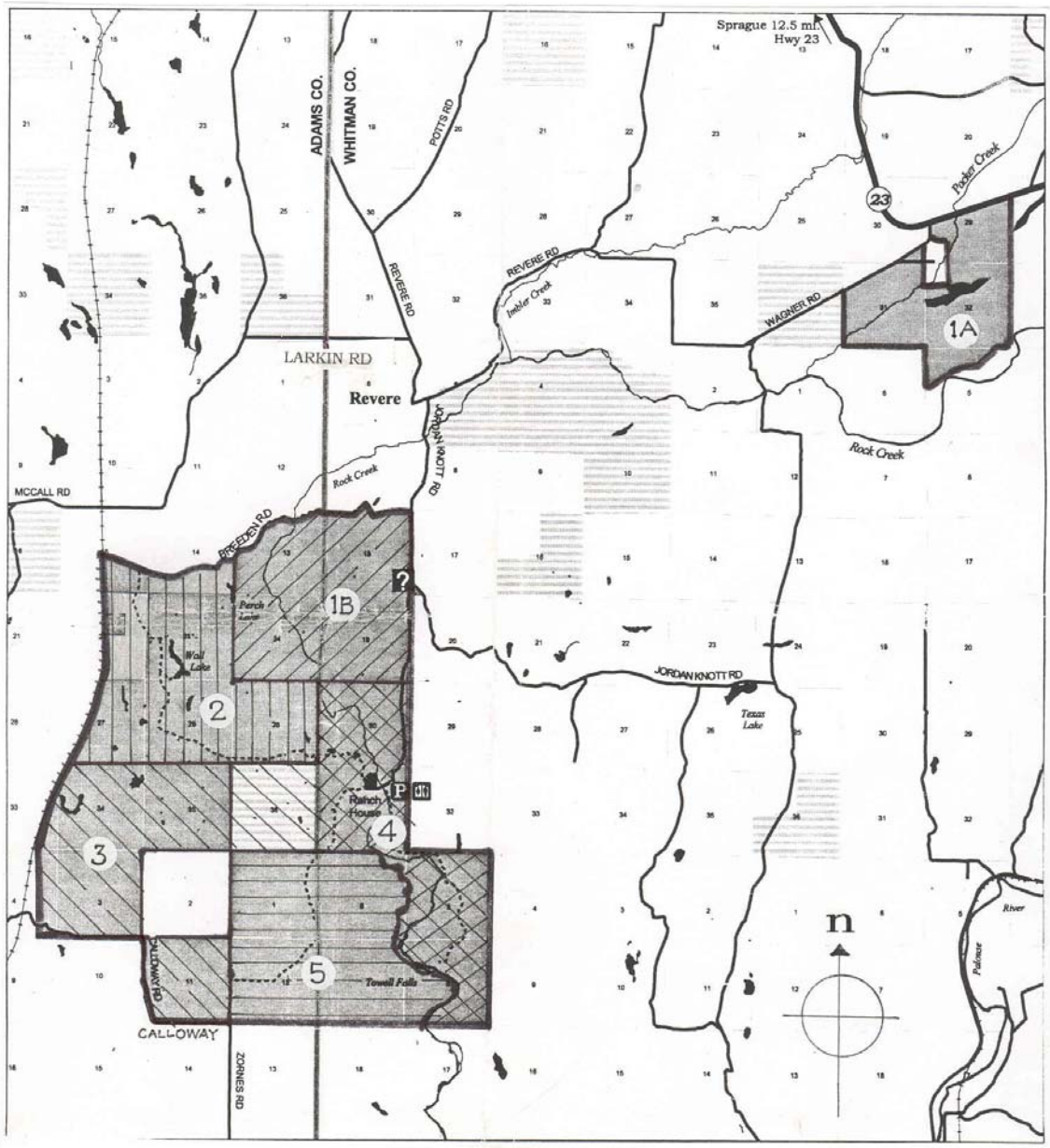
NUMBER OF SPECIES PER SECTOR					
1A	1B	2	3	4	5
41	68	77	75	86	58

NUMBER OF SPECIES PER HABITAT				
RIPARIAN	SCABLAND	OPEN GROUND	SKY	ALL HABITATS
85	36	21	14	13

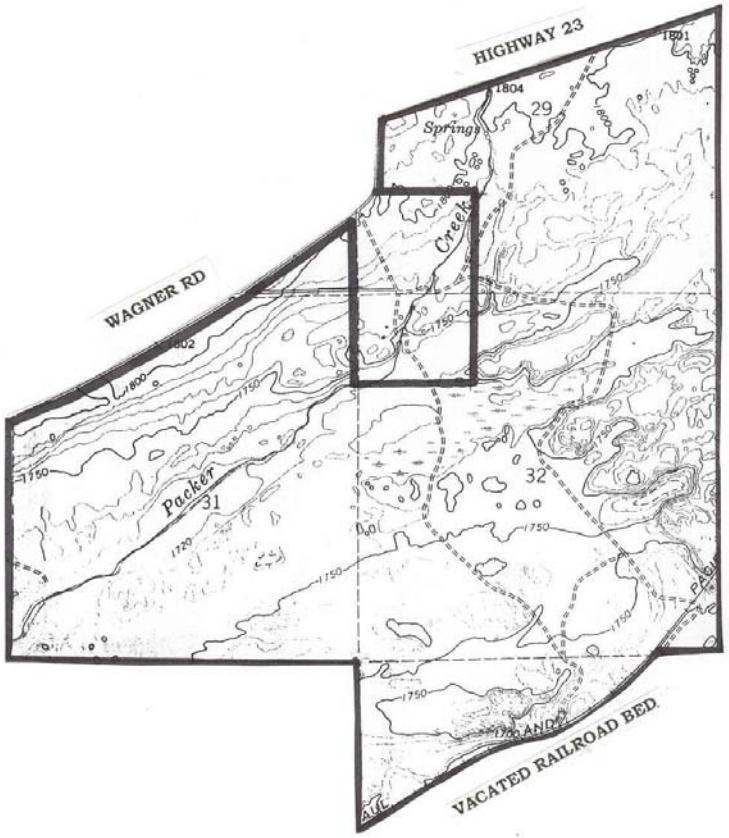
NUMBER OF SPECIES PER BREEDING STATUS			
CONFIRMED	PRESUMED	UNKNOWN	NON-BREEDER
40	25	41	31

NUMBER OF SPECIES PER OBSERVATION RATIO - (X/30)				
ONE SURVEY ONLY (1/30)	TWO TO FIVE (2/30 TO 5/30)	SIX TO FIFTEEN (6/30 TO 15/30)	SIXTEEN TO TWENTY FIVE (16/30 TO 25/30)	MORE THAN TWENTYFIVE (26/30 +)
37	49	30	18	4

SURVEY SECTORS

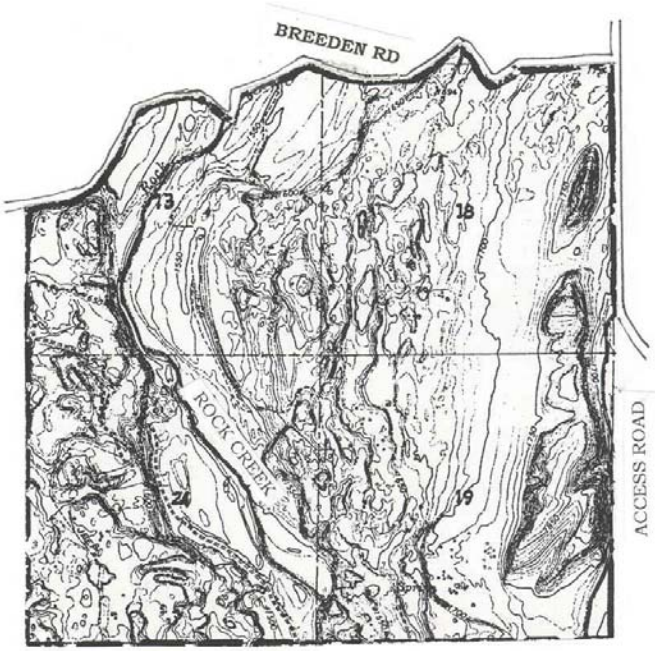


SECTOR 1A



WETLAND AND MESA LOOKING SOUTH

SECTOR 1B

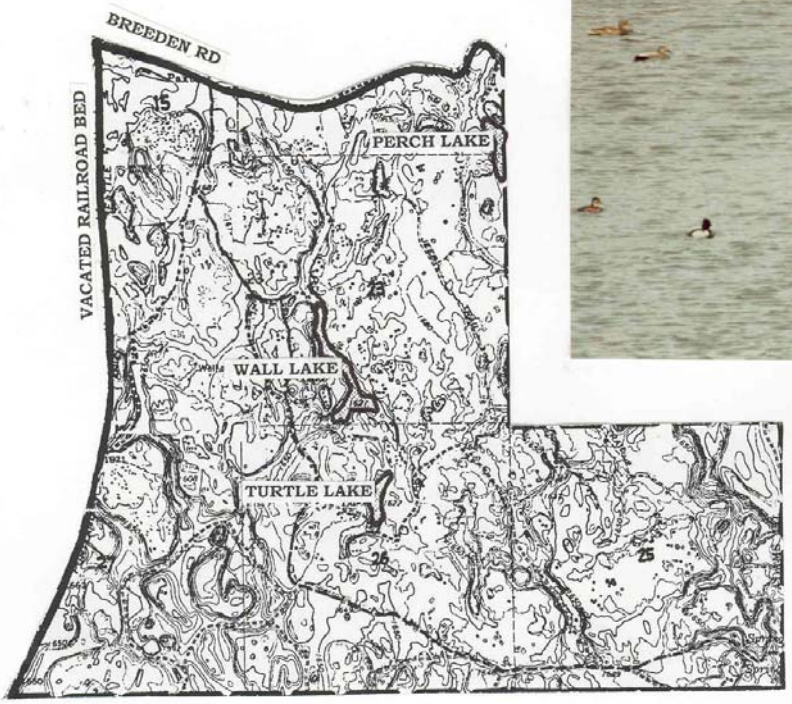


... RED-TAILED OR SWAINSON'S?

WHERE?

ARE YOU SURE?

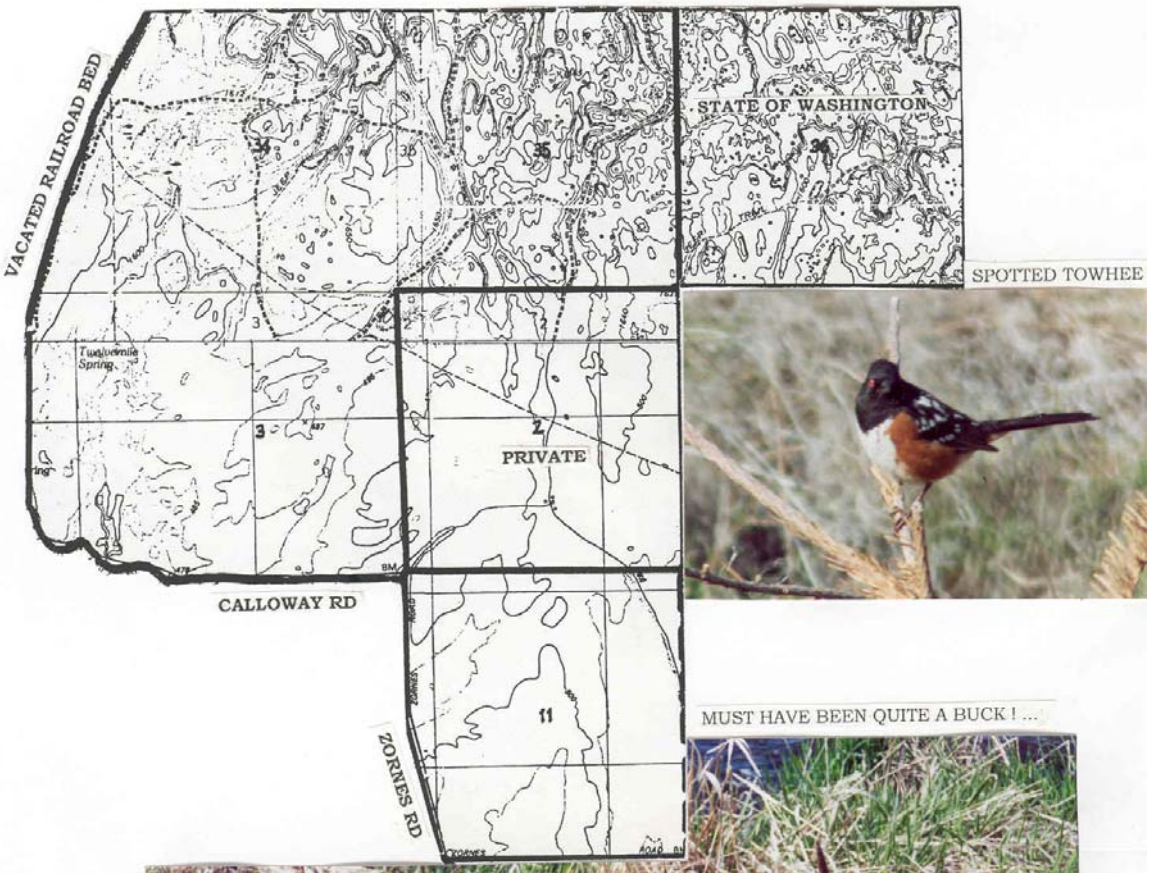
SECTOR 2



MALLARD, GADWALL, AMERICAN WIGEON, RING-NECKED DUCK AND COMMON GOLDEN EYE ON WALL LAKE

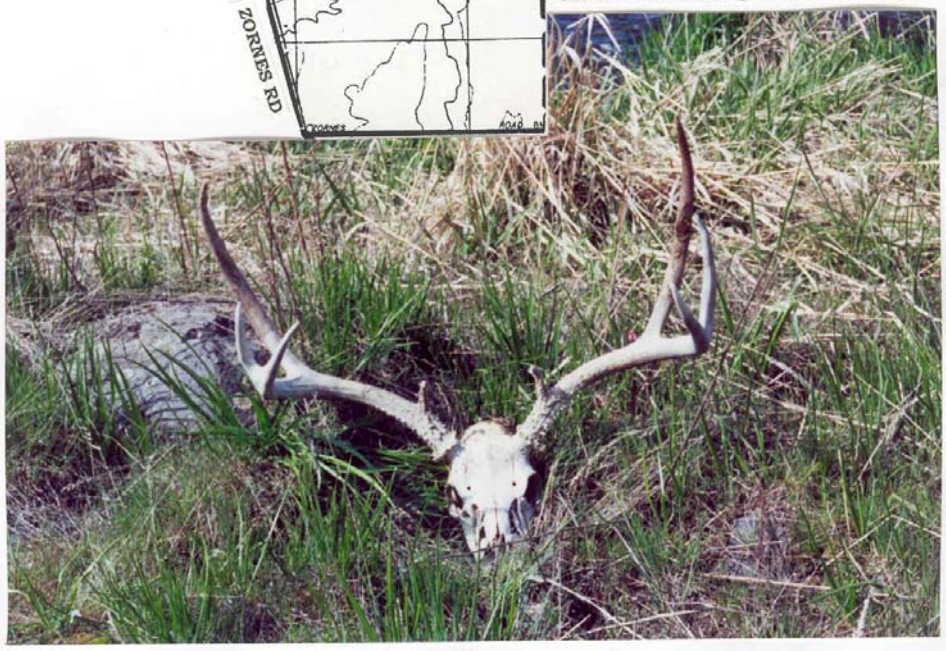
TYPICAL CHANNELED SCABLAND IN EARLY SPRING

SECTOR 3



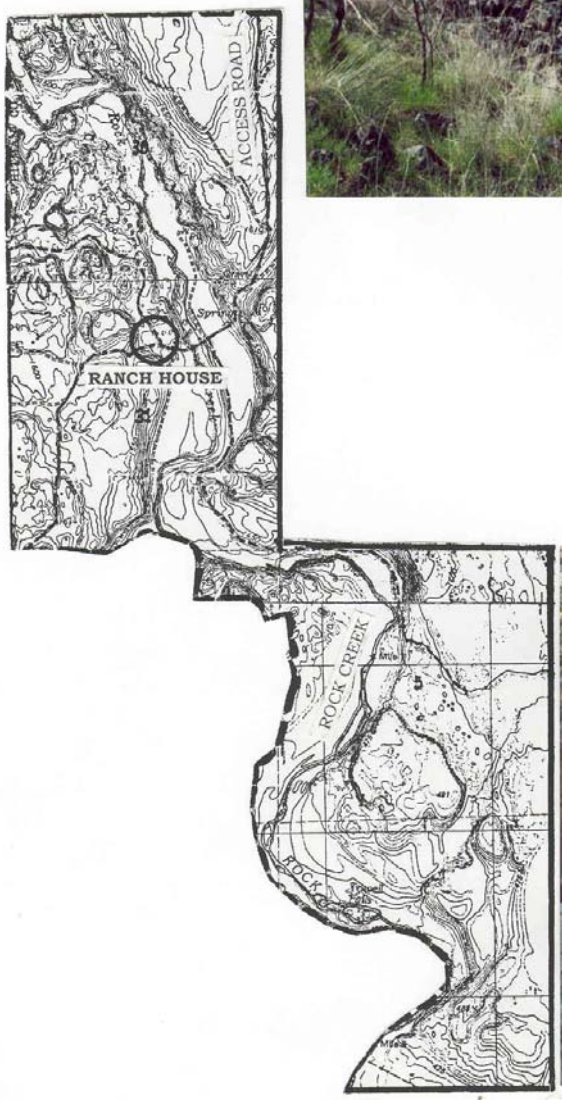
SPOTTED TOWHEE

MUST HAVE BEEN QUITE A BUCK ! ...



SECTOR 4

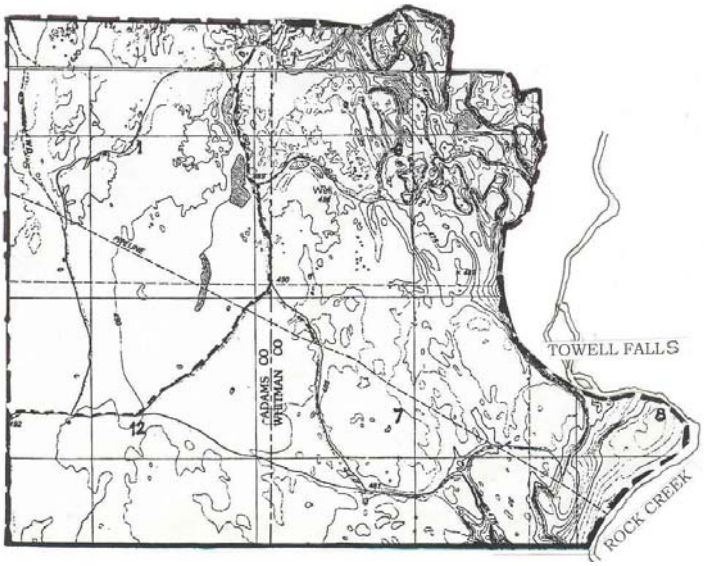
TOWELL FALLS



PUBLIC HOUSING PROJECT

SECTOR 5

GRAZED LAND OF SW SECTOR 5



Many thanks, to all those who braved
heat, bugs, thorns and threatening rattlers
to participate in this survey.

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for his technical assistance in the
printing of this report.

Outstanding photographs are by Tom Munson.
Marginal photographs are by Maurice Vial.